

## ABSTRACT

The present invention improves athletic performance by storing in a spring or elastic pad in the shoes, the energy expended during the down-step movement of the athlete's leg; that energy is released subsequently, during the upward movement of the leg. It is shown that improvement of athletic performance takes place only when the rebound provided by the shoe is synchronized with the upward motion of the leg, i.e. when the period of oscillation of the spring or elastic pad, matches the frequency of up and down movement of the leg. The period of oscillation of a spring depends on the spring constant as well as on the compressing mass, and different sports activities require different periods of oscillation. In the preferred embodiment of the present invention, adjustment of the period of oscillation of the shoes, is accomplished by selection of a shoe which produces the desired frequency of oscillation when loaded by a particular athlete's weight, from among a set of shoes in the same size, manufactured with different spring constants.